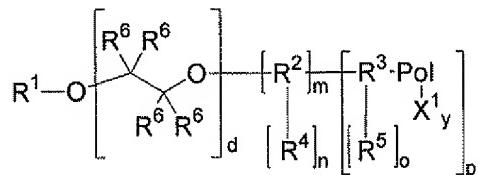


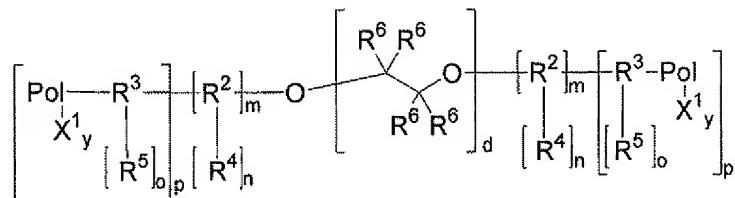
AMENDMENTS TO THE CLAIMS

1-9 Cancelled

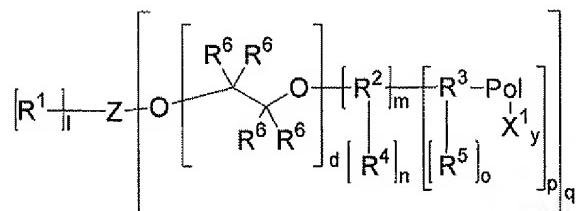
10. (New) Polyvinyl polymer based on formulae IV, IVa and IVb



formula IV



formula IVa



formula IVb

wherein

Z is a central atom and is an atom from groups 13 to 16 of the Periodic Table of the Elements or is an aromatic parent structure with at least four carbon atoms, in which one or more carbon atoms may be replaced by boron, nitrogen or phosphorus, wherein said aromatic parent structure is optionally substituted, or

is a cyclic non-aromatic parent structure with at least three carbon atoms, which optionally contains at least one heteroatom,

X¹ is identical or different at each occurrence and is a halogen atom,

R¹ is identical or different and is hydrogen or a C₁ – C₂₀ group, and

R² is identical or different and is a bridging C₁ – C₂₀ group between the central atom Z and the initiating unit [R³-X¹] or silicon or oxygen, and

R³ is identical or different and is carbon or silicon, and

R⁴ is identical or different and is a hydrogen atom or a C₁ – C₂₀ group, and

R⁵ is identical or different and is hydrogen or a C₁ – C₂₀ group,

R⁶ is identical or different and is hydrogen or a C₁ – C₂₀ group,

d is identical or different and is a whole natural number, and is a number between 5 and 100 000, and

l is a whole natural number and is zero, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, and

m is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4 or 5, and

n is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, and

o is identical or different at each occurrence and is 1 or 2, and

p is identical or different at each occurrence and is a whole natural number, and is 1, 2, 3, 4 or 5, and

q is a whole natural number and is 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, and

y can be identical or different, and is zero or one, and

Pol is a homopolymer or copolymer based on a polyvinyl ester, a homopolymer or copolymer based on a polyvinyl alcohol or a homopolymer or copolymer based on a polyvinyl acetal.

11. (New) The polymer as claimed in claim 10, wherein
- R⁶ is identical or different and is hydrogen or methyl,
- Z is carbon, silicon, nitrogen, phosphorus, oxygen or sulphur, or is an aromatic parent structure with at least four carbon atoms, in which one or more carbon atoms is optionally replaced by boron, nitrogen or phosphorus, wherein said aromatic or

heteroaromatic parent structures are derived from benzene, biphenyl, naphthalene, anthracene, phenanthrene, triphenylene, quinoline, pyridine, bipyridine, pyridazine, pyrimidine, pyrazine, triazine, benzopyrrole, benzotriazole, benzopyridine, benzopyrazidine, benzopyrimidine, benzopyrazine, benzotriazine, indolizine, quinolizine, carbazole, acridine, phenazine, benzoquinoline, phenoxazine, which optionally are substituted, or is a cyclic non-aromatic parent structure with at least three carbon atoms, which optionally contains as nitrogen, boron, phosphorus, oxygen or sulphur, and said cyclic non-aromatic parent structure is derivable from the cycloalkyl group, cycloheteroalkyl group, or from the saccharides group,

X¹ is identical or different at each occurrence and is fluorine, chlorine, bromine or iodine and

Pol is polyvinyl butyral.

12. (New) The polymer as claimed in claim 11, wherein Z is a cyclic non-aromatic parent structure with at least three carbon atoms, which optionally contains as nitrogen, boron, phosphorus, oxygen or sulphur, and said cyclic non-aromatic parent structure is derivable cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, aziridine, azetidine, pyrrolidine, piperidine, azepane, azocane, 1,3,5-triazinane, 1,3,5-trioxane, oxetane, furan, dihydrofuran, tetrahydrofuran, pyran, dihydropyran, tetrahydropyran, oxepane, oxocane, alpha-glucose or beta-glucose, and

X¹ is identical or different at each occurrence and is chlorine, bromine or iodine.

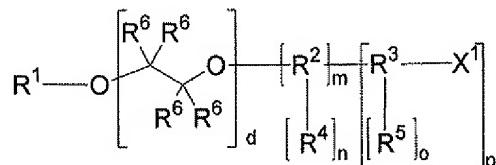
13. (New) The polymer according to Claim 10, wherein Pol is a polymer based on polyvinyl acetate or polyvinyl butyral.

14. (New) The polymer according to Claim 10, wherein Pol is a copolymer based on a polyvinyl ester with 1 or more 1-olefins having 4 to 20 carbon atoms.

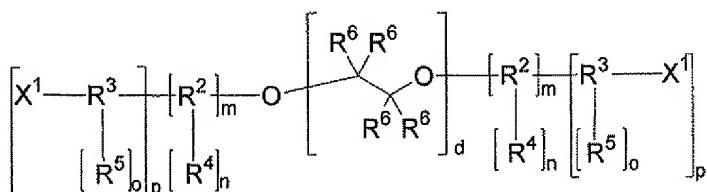
15. (New) The polymer according to Claim 10, wherein Pol is a homopolymer based on polyvinyl acetate.

16. (New) The polymer according to Claim 10, wherein Pol is a copolymer based on a polyvinyl acetate with 1 or more 1-olefins having 4 to 20 carbon atoms.

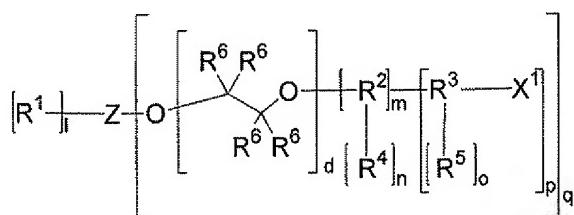
17. (New) A component which comprises the polymer as claimed in claim 10, wherein the component is an adhesive component, emulsifier, detergent, lubricant, coating component for electrically insulating magnetic wires, coating component for producing laminated glass sheets, an additive for motor fuels, an additive for engine oils, concrete, and additive in papermaking, an additive for producing water-soluble films and additive for preparing biodegradable and water-soluble polymers.
 18. (New) The component as claimed in claim 17, wherein the component is an adhesive primer or a textile coating.
 19. (New) An initiator system which comprises at least one initiator of formula I, Ia or Ib, at least one metal compound of formula II and optionally at least one additive of the formula III:



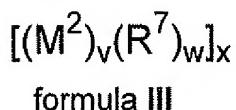
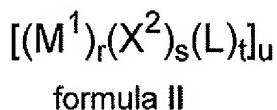
formula I



formula 1a



formula I^b



wherein

Z is a central atom and is an atom from groups 13 to 16 of the Periodic Table of the Elements or is an aromatic parent structure with at least four carbon atoms, in which one or more carbon atoms may be replaced by boron, nitrogen or phosphorus, wherein said aromatic parent structure is optionally substituted, or is a cyclic non-aromatic parent structure with at least three carbon atoms, which optionally contains at least one heteroatom,

X¹ is identical or different at each occurrence and is a halogen atom,

R¹ is identical or different and is hydrogen or a C₁ – C₂₀ group, and

R² is identical or different and is a bridging C₁ – C₂₀ group between the central atom Z and the initiating unit [R³-X¹] or silicon or oxygen, and

R³ is identical or different and is carbon or silicon, and

R⁴ is identical or different and is a hydrogen atom or a C₁ – C₂₀ group, and

R⁵ is identical or different and is hydrogen or a C₁ – C₂₀ group,

R⁶ is identical or different and is hydrogen or a C₁ – C₂₀ group,

d is identical or different and is a whole natural number, and is a number between 5 and 100 000, and

I is a whole natural number and is zero, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, and

m is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4 or 5, and

n is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, and

o is identical or different at each occurrence and is 1 or 2, and

p is identical or different at each occurrence and is a whole natural number, and is 1, 2, 3, 4 or 5, and

- q is a whole natural number and is 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,
- M¹ is identical or different at each occurrence and is a transition metal from groups 3 to 12 of the Periodic Table of the Elements,
- X² is identical or different at each occurrence and is oxygen or a halogen atom,
- L is identical or different at each occurrence and is a ligand,
- r is identical or different at each occurrence and is a whole natural number, and is 1, 2, 3, 4 or 5, and
- s is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4 or 5, and
- t is identical or different at each occurrence and is a whole natural number, and is zero, 1, 2, 3, 4 or 5, and
- u is a whole natural number and is 1, 2, 3, 4 or 5, and
- M² is identical or different and is an element from groups 1 to 15 of the Periodic Table of the Elements,
- R⁷ is identical or different and is hydrogen, a halogen atom or a C₁ – C₂₀ group,
- v is identical or different and is a whole natural number, and is 1, 2, 3, 4, 5, 6, 7 or 8, and
- w is identical or different and is a whole natural number, and is 1, 2, 3, 4, 5, 6, 7 or 8, and
- x is a whole natural number and is 1, 2, 3, 4, 5, 6, 7 or 8.

20. (New) The initiator system as claimed in claim 19, wherein
- R⁶ is identical or different and is hydrogen or methyl,
 - Z is carbon, silicon, nitrogen, phosphorus, oxygen or sulphur, or is an aromatic parent structure with at least four carbon atoms, in which one or more carbon atoms is optionally replaced by boron, nitrogen or phosphorus, wherein said aromatic or heteroaromatic parent structures are derived from benzene, biphenyl, naphthalene, anthracene, phenanthrene, triphenylene, quinoline, pyridine, bipyridine, pyridazine, pyrimidine, pyrazine, triazine, benzopyrrole, benzotriazole, benzopyridine, benzopyrazidine, benzopyrimidine, benzopyrazine, benzotriazine, indolizine, quinolizine, carbazole, acridine, phenazine, benzoquinoline, phenoxazine, which optionally are substituted, or is a cyclic non-aromatic parent structure with at least three carbon atoms,

which optionally contains as nitrogen, boron, phosphorus, oxygen or sulphur, and said cyclic non-aromatic parent structure is derivable from the cycloalkyl group, cycloheteroalkyl group, or from the saccharides group,

X¹ is identical or different at each occurrence and is fluorine, chlorine, bromine or iodine,

M¹ is identical or different at each occurrence and is chromium, molybdenum, ruthenium, iron, rhodium, nickel, palladium or copper,

X² is identical or different at each occurrence and is oxygen, fluorine, chlorine, bromine or iodine,

L is identical or different at each occurrence and is a carbon-containing ligand or a phosphorus-containing ligand,

M² is identical or different and is Li, Mg, Ti, B, Al, P or N, and

R⁷ is identical or different and is methoxy, ethoxy, n-propoxy or isopropoxy.

21. (New) The initiator system as claimed in claim 20, wherein Z is a cyclic non-aromatic parent structure with at least three carbon atoms, which optionally contains as nitrogen, boron, phosphorus, oxygen or sulphur, and said cyclic non-aromatic parent structure is derivable cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, aziridine, azetidine, pyrrolidine, piperidine, azepane, azocane, 1,3,5-triazinane, 1,3,5-trioxane, oxetane, furan, dihydrofuran, tetrahydrofuran, pyran, dihydropyran, tetrahydropyran, oxepane, oxocane, alpha-glucose or beta-glucose,

X¹ is identical or different at each occurrence and is chlorine, bromine or iodine and

X² is identical or different at each occurrence and is oxygen, fluorine, chlorine, bromine or iodine,

L is identical or different at each occurrence and is methyl, phenyl, cymene, cumene, tolyl, mesityl, xylyl, indenyl, benzylidene, cyclopentadienyl or carbonyl, a nitrogen-containing ligand, such as triethylamine, tetramethylethylenediamine, pyridine, 2,2'-bipyridyl, substituted 2,2'-bipyridyl, 1,10-phenanthroline, phenylpyridin-2-yl-methylenamine, acetonitrile, substituted imidazolidine, terpyridyl, triphenylphosphine, tricyclohexylphosphine, bis(diphenylphosphino)ethane, bis(diphenylphosphino)propane or BINAP, and

M¹ is identical or different at each occurrence and is iron or ruthenium.

22. A process to produce the initiator system as claimed in claim 19 which comprises reacting the compound of the formula I, Ia or Ib with a metal compound of the formula II.
23. A process for preparing a polymer which comprises polymerizing vinyl esters with one or more initiator systems according to claim 20.
24. A process for purifying the polymer as claimed in claim 10, which comprises the following steps:
 - (A) reacting at least one compound of the formula I, Ia or Ib with at least one metal compound of the formula II, optionally in the presence of at least one additive of the formula III;
 - (B) concentrating the reaction mixture from step A) to remove residual monomer and solvents,
 - (C) dissolving the reaction mixture from step B) in one or more organic solvents;
 - (D) optionally oxidizing the catalyst present in the mixture, by stirring in the presence of atmospheric oxygen or addition of oxidizing agents;
 - (E) optionally separating off reaction products formed during the oxidation in step D);
 - (F) precipitating the polymer by adding the polymer solution to one or more apolar aprotic solvents, separating the supernatant solvent, and optionally drying the polymer obtained;
 - (G) optionally, redissolving the polymer obtained from step F) in one or more organic solvents,
 - (H) precipitating the polymer by adding the solution from step G) to water or to an aqueous solution of an acid or to an aqueous solution of a base, where appropriate with stirring and cooling,
 - (I) isolating the precipitated polymer, preferably by filtration or phase separation, optionally washing the polymer with water or with one of the liquids specified in step H),
 - (J) optionally repeating steps G), H) and I), and
 - (K) drying the polymer.